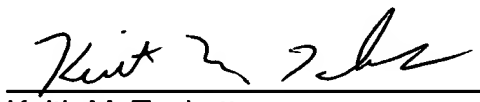
II. Claims 34-54, drawn to a method for removing a metal layer from a substrate, classified in class 438, subclass 690.

Applicants elect claims 34-54 with traverse. The Examiner states that the apparatus can be used to perform another process, such as polishing an optical disk. Applicants have amended apparatus claims 1 and 21 to correspond to method claims 34 and 46, respectively. Applicants submit that the claims as amended are drawn to the elected invention and thus no claims should be restricted. Applicants respectfully request withdrawal of the restriction requirement.

Applicants have amended the specification and claims 1, 10, 13, 15, 21, 22, 23, 27-32, 35, 39, 40, 41, 44, 49, and 50 as to matters of form. Applicants submit that the changes made herein do not introduce new matter and are supported by the specification.

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace paragraph [0038] with the following paragraph:

[0038] Since power supply 210 is generally configured to output a constant current during the deplating/metal layer removal process, the increase in circuit voltage resulting from metal layer 501 being removed from the area below nozzle 223 may be measured and/or monitored by controller 230. Therefore, when the circuit voltage increases above a predetermined threshold, where the threshold is calculated to represent the point where metal layer 501 is removed from the area below nozzle 223, controller 230 may be configured to adjust the radial position of arm 224 so that nozzle 223 is over an area of metal layer 501 that has not been removed yet. For example, Figure 7 illustrates substrate 500 during the metal removal process. Initially, nozzle 223 will be positioned above substrate center 601, and therefore, the metal layer 501 in region 700 proximate center 601 will be removed. Once metal layer 501 in central region 700 is removed, the voltage in the circuit will increase. Controller 230 monitors the increased voltage and actuates stepping motor 231 in response thereto, which adjusts the radial position of arm 224 so that nozzle 223 is over annular region 701 where metal layer 501 has not yet been removed. The metal removal process continues until the voltage in the circuit again increases past the predetermined threshold indicating that the metal layer 501 in annular region 701 has been removed. When the voltage increases past the threshold, controller 231 again adjusts the radial position of arm 224 to position nozzle 223 over annular region 702 where the metal layer 501 has not yet been removed. This process continues successively through numerous annular regions of substrate 500 until nozzle 223 reaches the perimeter 703 of substrate 500. Therefore, generally, as the metal layer removal process continues, the radial position of arm 122 may be adjusted outward from center 601 by controller 230 in order to facilitate removal of the remaining metal layer 501 from the outer portion 604 of substrate 500, as illustrated in Figure 6. The direction of radial or pivotal

movement of arm 224 is shown by arrow 605, and generally includes a radial or pivotal movement of arm 224 that causes nozzle 223 to be moved away from the center 601 of substrate 500.

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) A apparatus for removing a metal layer from a substrate, comprising:

a rotatable anode substrate support member configured to support a substrate;

a movable cathode fluid dispensing nozzle [assembly] positioned above the anode substrate support member;

a power supply in electrical communication with the anode substrate support member and the cathode fluid dispensing nozzle; and

a system controller configured to [regulate at least one of a rate of rotation of the anode] rotate a substrate in a face up position on the rotable anode substrate support member, [a] position [of] the cathode fluid dispensing nozzle over a central portion of the substrate, dispense a metal removing solution from the cathode fluid dispensing nozzle onto the central portion of the substrate, and apply an electrical bias between the substrate and the cathode fluid dispensing nozzle [and an output power of the power supply].

10. (Amended) The apparatus of claim 1, wherein the cathode fluid dispensing nozzle is positioned at a distal end of an arm member in electrical communication with a negative terminal of the power supply, and the [cathode fluid dispensing nozzle assembly further comprises:

a base member having a fluid conduit formed therein;

a longitudinally extending arm member having a substantially hollow interior portion, the] arm member [being] is affixed to a distal end of [the] a base member [so

that the substantially hollow interior portion is in fluid communication with the fluid conduit of the base member;

a cathode fluid dispensing nozzle positioned at a distal end of the arm member and being configured to dispense a fluid onto the substrate positioned thereunder, the cathode fluid dispensing nozzle being in electrical communication with a negative terminal of the power supply; and

an arm actuator in communication with the arm member for selectively varying a radial position of the arm member].

13. (Amended) The apparatus of claim 12, wherein the predetermined voltage threshold corresponds to removal of the metal layer [is] from an area immediately below the cathode fluid dispensing nozzle [assembly].

15. (Amended) The apparatus of claim 1, further comprising a fluid delivery system having at least one fluid source [and at lease one fluid supply control valve in communication with each of the at least one fluid sources, each of the at least one fluid supply control valves being] in communication with the cathode fluid dispensing nozzle [assembly].

21. (Amended) An apparatus for electrochemically removing a metal layer from a substrate surface, comprising:

a processing chamber having one or more monitors for determining plating circuit voltage and plating circuit resistance [a rotatable anode substrate support member] positioned therein; [and]

a radially mounted [cathode fluid dispensing] nozzle [assembly] positioned in the processing chamber[, the cathode fluid dispensing assembly being in communication with a pivotal actuator configured to selectively adjust a radial position of the cathode fluid dispensing assembly];

[a power supply having a an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the cathode fluid dispensing assembly;] and

a microprocessor controller in communication with the [pivotal actuator] nozzle, the microprocessor controller being configured to [control] monitor at least one of the plating circuit voltage and the plating circuit resistance, and adjust a [the] radial position of the [cathode fluid dispensing assembly] nozzle while dispensing an electrolytic solution onto a substrate in order to deplate a metal layer therefrom when at least one of the plating circuit voltage and the plating circuit resistance exceeds a predetermined threshold [relative to a center of the substrate].

22. (Amended) The apparatus of claim 21, wherein the radially mounted [cathode fluid] electrolyte dispensing [member] nozzle is part of an electrolyte dispensing assembly that comprises:

a base member mounted to the processing chamber, the base member having a fluid conduit formed therein for communicating a fluid therethrough;

an elongated arm member pivotally mounted to the base member and having a substantially hollow interior portion forming at least one fluid conduit therethrough; and

at least one [cathode fluid] electrolyte dispensing nozzle mounted to a distal end of the arm member and being in fluid communication with the at least one fluid conduit.

23. (Amended) The apparatus of claim 22, wherein the at least one [cathode fluid] electrolyte dispensing nozzle further comprises:

a first [cathode fluid] electrolyte dispensing nozzle mounted on a distal end of the arm member, the first [cathode fluid dispensing] electrolyte nozzle being configured to dispense a metal removing electrolytic solution onto the substrate; and

a second fluid dispensing nozzle mounted on the arm member between the first fluid dispensing nozzle and the base member, the second fluid dispensing nozzle being configured to dispense a neutralizing solution onto the substrate at a position radially outward from the center of the substrate relative to the first [fluid] electrolyte dispensing nozzle.

24. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber, wherein the rotatable anode substrate support member comprises:

a rotatable shaft member having a substantially hollow interior portion;

a disk shaped substrate receiving surface concentrically mounted to the shaft member; and

a stepping motor in communication with the rotatable shaft member, the motor being configured to impart rotational motion to the shaft member in order to rotate the disk shaped substrate receiving member.

27. (Amended) The apparatus of claim 26, further comprising a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the plurality of conductive electrical contacts are cooperatively in electrical communication with an anode output of the power supply.

28. (Amended) The apparatus of claim 23, further comprising a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the first [cathode fluid] electrolyte dispensing nozzle is in communication with a cathode output of the power supply.

29. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber and a power supply having an anode output in electrical communication with the anode substrate support member and a cathode output in electrical communication with the electrolyte dispensing nozzle, wherein the power supply forms a deplating circuit with the anode substrate support member, a deplating solution, and the [cathode fluid] electrolyte dispensing [assembly] nozzle.

30. (Amended) The apparatus of claim 29, wherein the controller is configured to monitor a deplating circuit voltage and pivotally adjust a radial position of the [cathode fluid] electrolyte dispensing [assembly] nozzle relative to a center of the substrate when the deplating [sircuit] circuit voltage exceeds a predetermined threshold voltage.

31. (Amended) The apparatus of claim 21, further comprising a rotable anode substrate support member positioned in the processing chamber, wherein the rotatable anode substrate support member [further] comprises a lift pin assembly configured to lift a substrate from the substrate receiving surface for removal from the processing chamber by a robot.

32. (Amended) The apparatus of claim 21, wherein the controller is configured to monitor a parameter of a plating circuit and adjust a radial position of the [cathode fluid] electrolyte dispensing [assembly] nozzle in response to the parameter exceeding a predetermined threshold.

35. (Amended) The method of claim 34, further comprising adjusting a radial position of the cathode fluid dispensing nozzle outward from the central portion of the substrate in response to a parameter r of the electrical bias [exceeds] exceeding a predetermined threshold.

39. (Amended) The method of claim 38, wherein each of the plurality of radially positioned conductive electrical contacts are in electrical communication with the positive output of the power supply.

40. (Amended) The method of claim [34] 35, wherein adjusting a radial position of the cathode fluid dispensing nozzle comprises:

monitoring at least one of a plating circuit voltage and a plating circuit resistance with a system controller; and

adjusting the radial position of the cathode fluid dispensing nozzle when at least one of the plating circuit voltage and the plating circuit resistance exceeds the predetermined threshold.

41. (Amended) The method of claim [34] 35, wherein adjusting the radial position of the cathode fluid dispensing nozzle outward comprises:

removing the metal layer from a first annular area on the surface of the substrate, wherein the first annular area corresponds to the area covered by the cathode fluid dispensing nozzle during a rotation of the substrate; and

adjusting the radial position of the nozzle outward to a second annular area on the surface of the substrate, wherein the second annular area immediately circumscribes the first annular area and has the metal layer remaining thereon.

44. (Amended) The method of claim 34, wherein [electrically contacting the substrate] applying an electrical bias comprises electrically engaging the substrate with a contact ring.

49. (Amended) The method of claim 48, further comprising incrementing through increasing [size] sized and abutting circumferential bands across a surface of the substrate.

50. (Amended) The method of claim 46, comprising:

securing a substrate having the metal layer thereon to a substrate support member in a face up position;

rotating the substrate support member;

applying an electrical bias to a plating circuit; and

dispensing [and] an electrolytic solution calculated to remove the metal onto a surface of the substrate.